

In the Claims

Please make the following amendments that are provided by replacement claims. The replacement claims are identified by claim number. Marked-up versions of the amendments to the claims follow the remarks section of this response.

A4
1. (Amended) A mass flowmeter system for use in controlling a reformation reaction in a hydrogen production system, said mass flowmeter system comprising:
a hydrocarbon feedstock supply for supplying a hydrocarbon feedstock to said hydrogen production system;
a steam supply for supplying steam to said hydrogen production system;
a first flowmeter for measuring a mass flow rate of said hydrocarbon feedstock supplied to said hydrogen production system, and for producing a hydrocarbon flow rate signal representing said mass flow rate of said hydrocarbon feedstock;
a second flowmeter for measuring a flow rate of said steam supplied to said hydrogen production system, and for producing a steam flow rate signal representing said flow rate of said steam; and
a controller operable for receiving said hydrocarbon flow rate signal and said steam flow rate signal, the controller having program instructions for processing said mass flow rate of said hydrocarbon feedstock to determine an estimated carbon content of said hydrocarbon feedstock, and controlling at least one of said flow rate of said steam and said flow rate of said hydrocarbon feedstock based on a ratio of said estimated carbon content and said steam delivered to said hydrogen production system.

2. (Amended) The mass flowmeter system of claim 1 wherein said first flowmeter comprises a Coriolis mass flowmeter.

3. (Amended) The mass flowmeter system of claim 1 wherein said second flowmeter comprises a mass flowmeter.

4. (Amended) The mass flowmeter system as set forth in claim 3 wherein said second flowmeter comprises a Coriolis mass flowmeter.

A4
Cont.

5. (Amended) The mass flowmeter system of claim 1 wherein said program instructions include instructions for adjusting said ratio for a plurality of hydrocarbon fractions.

A5

8. (Amended) The mass flowmeter system of claim 7, wherein the first flowmeter comprises a Coriolis flowmeter operable for performing a density measurement, and the Coriolis flowmeter is operable for providing said controller with a signal representing said density measurement.

A6

10. (Amended) A method of operating a mass flowmeter system for use in steam reformation of hydrocarbons processing where a hydrogen production system is in use, said method comprising the steps of:

- measuring a mass flow rate of a hydrocarbon feedstock delivered to said hydrogen production system to provide a hydrocarbon mass flow rate measurement;
- measuring a flow rate of steam delivered to said hydrogen production system to provide a steam flow rate measurement;
- processing said hydrocarbon mass flow rate measurement to determine an estimated carbon content of said hydrocarbon feedstock; and
- controlling at least one of said flow rate of said steam and said flow rate of said hydrocarbon feedstock based on a ratio of said estimated carbon content and said steam delivered to said hydrogen production system.

11. (Amended) The method according to claim 10, wherein said step of measuring a mass flow rate of said hydrocarbon feedstock comprises measuring said mass flow rate of said hydrocarbon feedstock using a Coriolis mass flowmeter to obtain said hydrocarbon mass flow rate measurement.

12. (Amended) The method according to claim 10, wherein said step of measuring a flow rate of steam comprises measuring said flow rate of said steam using a mass flowmeter.

A⁶
Cont.

13. (Amended) The method according to claim 12, wherein said step of measuring a flow rate of steam comprises measuring said flow rate of said steam using a Coriolis mass flowmeter.

14. (Amended) The method according to claim 10, further comprising adjusting said ratio for a plurality of hydrocarbon feedstocks.

15. (Amended) The method according to claim 14, wherein said step of controlling at least one of said flow rate of said steam and said flow rate of said hydrocarbon feedstock based on a ratio comprises determining said ratio from a correlation based upon a measured physical parameter of said hydrocarbon feedstock.

16. (Amended) The method according to claim 15, wherein said measured physical parameter comprises density.

17. (Amended) The method according to claim 16, wherein said step of measuring a mass flow rate of a hydrocarbon feedstock comprises measuring said mass flow rate using a Coriolis flowmeter operable for performing a density measurement, and further comprising a step of obtaining said density by direct measurement from said Coriolis flowmeter.

18. (Amended) The method according to claim 10, wherein the step of controlling occurs contemporaneously with said steps of measuring said mass flow rate of said hydrocarbon feedstock and measuring said flow rate of said steam.

19. (Amended) The method according to claim 10, comprising repeating said steps of measuring said mass flow rate of said hydrocarbon feedstock and measuring said flow rate of said steam while said step of controlling is underway.